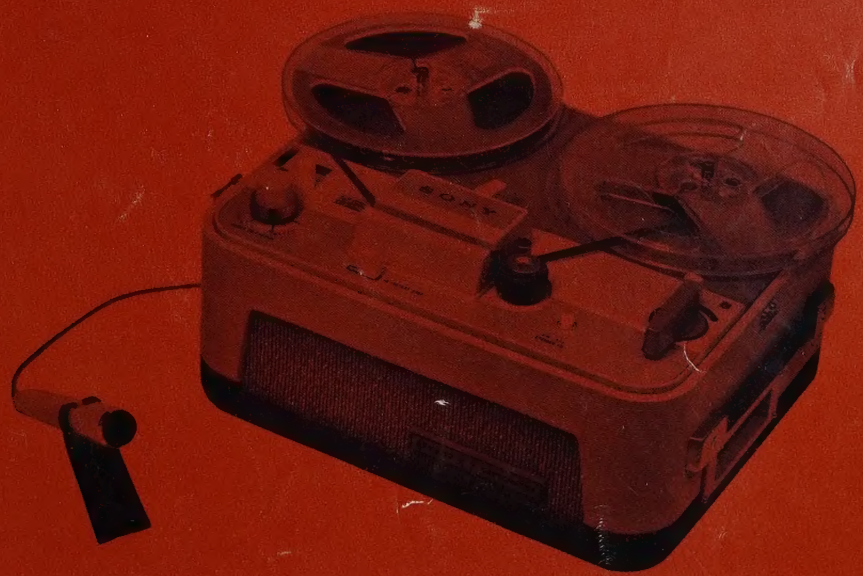
SY-1

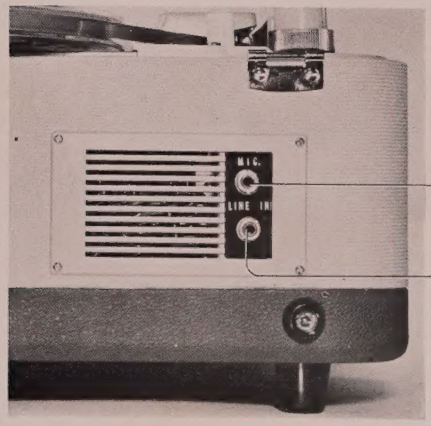
SONY®

TAPECORDER TC-102M

OWNER'S INSTRUCTION MANUAL

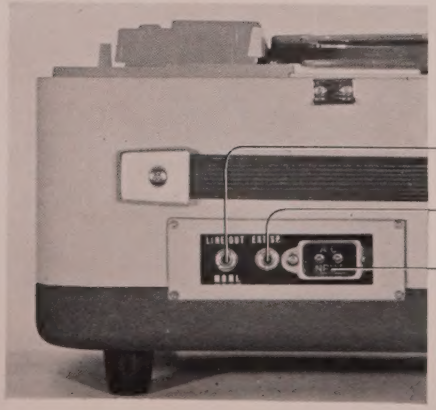


Inputs and Outputs



⑲ MICROPHONE INPUT

⑳ LINE INPUT



㉑ LINE / MONITOR OUTPUT

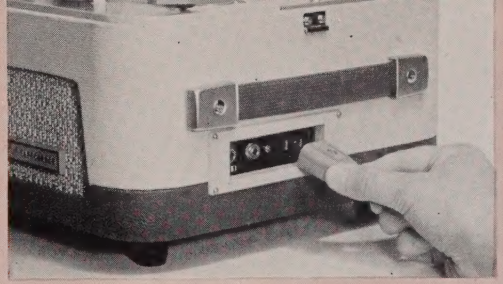
㉒ EXTERNAL SPEAKER OUTPUT

㉓ AC POWER RECEPTACLE

Table of Contents

Instructions for Simple Operation 2
To Load and Thread Tape 4
Detailed Instructions and Technical Information 5
1. AC On/Off Switch 5
2. Forward/Stop/Rewind Selector 5
3. Fast Forward Lever 5
4. Tape Speed Selector 5
5. Tape Counter 6
6. Instant Stop Lever 6
7. Volume Control Knob 6
8. Record Button 7
9. Record Level Meter 7
10. Speaker Switch 7
Erasing 8
Recording from AM/FM Tuner or Phonograph 8
Connection to External Speaker 9
Connection for External Amplifier/Speaker System 9
Public Address 10
MIX Recording 10
Maintenance 11
Lubrication Chart 12
Technical Specifications 13
Schematic Diagram 14

Instructions for Simple Operation



1. To Connect the Power Line

Insert the female plug of the Power Cord into AC POWER RECEPTACLE ㉓ on the right side of the Model 102M. Connect the plug on the other end into an AC power supply (wall receptacle).

2. To Turn on Power

Press AC ON/OFF Switch ⑦ on the extreme left of the lower control panel. The Pilot Lamp will indicate that the recorder is now ready to operate.

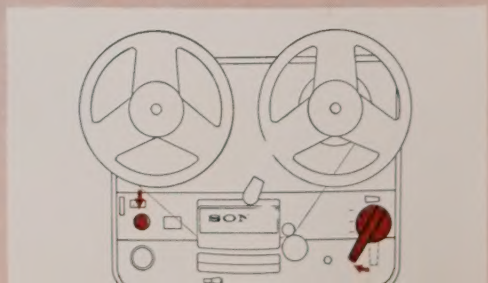
6. To Monitor Recording Contents

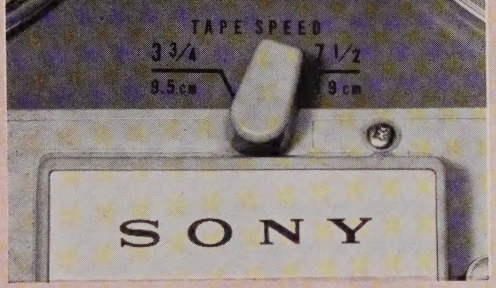
Monitoring can be made with the built-in speaker by pressing SPEAKER Switch ⑪ down, or with the earphone by plugging into LINE/MONITOR OUTPUT ㉒.

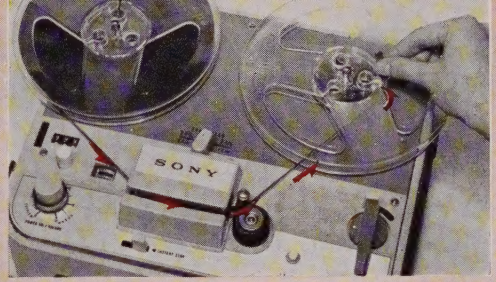
7. To Start Recording

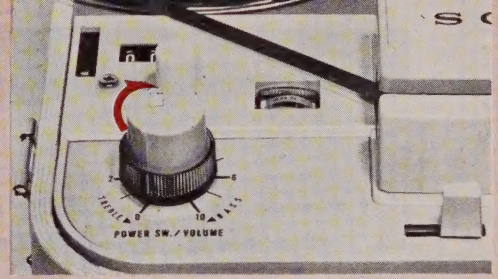
Hold down RECORD Button ⑥ and turn the FUNCTION Selector ⑫ to FORWARD. The Model 102M is now in recording mode.

(See page 7.)









3. To Select Tape Speed

Turn TAPE SPEED Selector ⑯ and set speed to either 7½ ips (19 centimeters per second) or 3¾ ips (9.5 centimeters per second).
Also set TAPE COUNTER ❹ to 〔000〕.
(See page 6.)

4. To Load and Thread Tape

Place an empty reel on right (Take-up) spindle ⑰ and a reel of tape on left (Feed) spindle ❷. Be sure that the slots in the reels are firmly engaged on the spindles. (See page 4.)

5. To Adjust Record Level

Plug the Microphone into MIC Jack ⑲. Hold down RECORD Button ❻ and adjust recording level with VOLUME CONTROL Knob ❼ so that the deflection of the VU Meter Indicator needle does not continually stay in red zone.

8. To Rewind the Tape

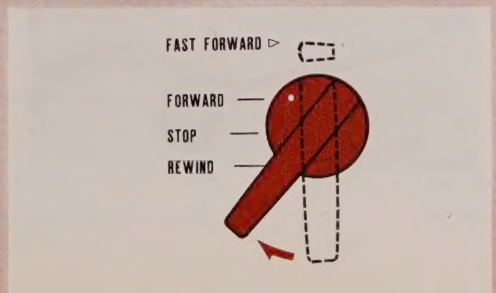
Turn the FUNCTION Selector ⑫ to REWIND until 〔000〕 appear on TAPE COUNTER ❹ to reach the beginning of the recording.
(See page 5.)

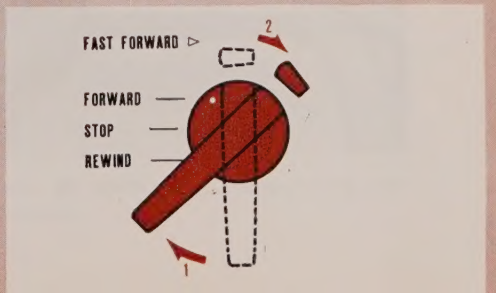
9. To Play Back

Turn FUNCTION Selector ⑫ to FORWARD. The knob of AC ON/OFF Switch ❼ operates as VOLUME CONTROL in playback mode, while the lower knob ❽ operates as TONE CONTROL.
(See page 6.)

10. To Move the Tape Fast Forward

To reach a desired position quickly, place FUNCTION Selector ⑫ to FORWARD position and push FAST FORWARD Lever ⑬ outward until the lever clicks into position. (See page 5.)





To Load and Thread Tape

Place an empty reel on right (Take-up) spindle ⑰ and a reel of tape on left (Feed) spindle ②. Be sure that the slots in the reels are firmly engaged on the spindles.

Pull out approximately 1½ feet of tape or leader from the full reel ①. The dull side of the tape must be wound on the inside. Drop this leader into the slot in front of the HEAD COVER ⑩ and fix the free end into a slot on TAKE-UP Reel ⑱. Turn the TAKE-UP Reel a few turns by hand so that the tape is firmly wound around TAKE-UP Reel. Model 102M is now ready for recording or playback.

NOTE : Use the feed reel and the take-up reel of the same size to obtain optimum performance.

Detailed Instructions and Technical Information

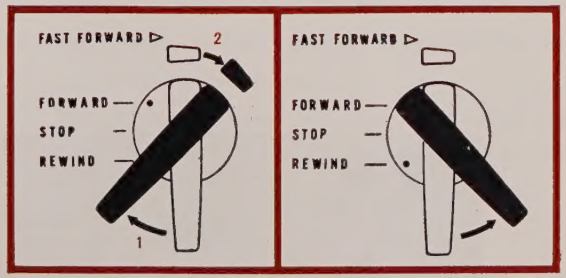
1. AC ON/OFF SWITCH ❼

On the left of the lower control panel is a push-style ON/OFF Switch which is also operated as VOLUME CONTROL Knob. Press it down to switch on, and press down again to switch off.

2. FORWARD/STOP/REWIND SELECTOR ⓬

This three position selector is controlled by the large beige knob located on the right side of the lower control panel. For FORWARD function turn the knob clockwise. For REWIND function turn the knob counterclockwise.

NOTE: Selection of FORWARD or REWIND must be made from center or STOP position of the knob.
Do not change from FORWARD to REWIND (or vice versc) until tape comes to a complete stop.



3. FAST FORWARD LEVER ⓭

FAST FORWARD Lever ⓭ is provided at the immediate top of the FUNCTION Selector ⓬. For fast forward tape motion, place FUNCTION Selector in FORWARD and push FAST FORWARD Lever ⓭ outward with your thumb until the lever clicks into position. To stop FAST FORWARD motion, simply turn the FUNCTION Selector ⓬ to STOP position. The FAST FORWARD Lever ⓭ will automatically be released.

4. TAPE SPEED SELECTOR ⓰

The Model 102M is equipped with a TAPE SPEED Selector ⓰ to permit recording at either 3¾ ips or 7½ ips (9.5 or 19 centimeters per second). This knob is located directly behind the HEAD COVER ❿ and automatically sets the proper recording and playback characteristics for each speed. Speeds are designated in both inches and centimeters respectively.

To record at 7½ ips push the knob down with a slight twist to the right.

Tape speed of 3¾ ips is obtained by turning the knob to the left so that the knob returns to the upper position.

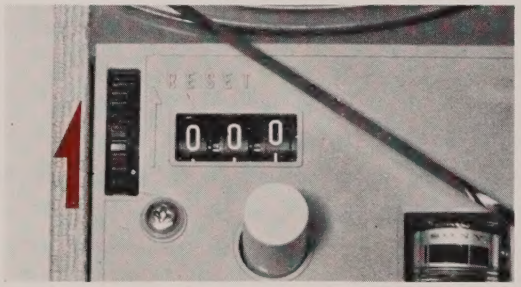
Note on Tape Speed

Tape Speed	3¾ ips (9.5 cm/s)	7½ ips (19 cm/s)
Use When	Longer recording time is desired.	Better sound quality is desired.
Recording Time (1200 ft of tape)	One hour each track	Thirty minutes each track

NOTE: TAPE SPEED Selector ⓰ should not be changed while tape mechanism is in motion.

5. TAPE COUNTER ❹

Located directly above the RECORD Button ❻ is a three digit counter with a reset wheel ❺ to the left of the counter window. Rotate reset wheel upwards until three zeros appear in the window, so that it is in position to start indicating the amount of tape used in either record or playback.



6. INSTANT STOP LEVER ❾

The INSTANT STOP Lever ❾ is located directly in front of the HEAD COVER ❿. This lever will instantly and safely stop normal forward motion either in record or in play mode. For instant stop push the lever slightly down and to the left. Upon releasing the lever, the tape will immediately pick up normal forward speed.

For PAUSE push the lever to the left and slightly upwards until the lock is engaged. To release simply push the lever down.

NOTE: Do not apply INSTANT STOP while in fast forward or rewind operation.

7. VOLUME CONTROL KNOB ❼ ❽

This multi-purpose coaxial knob is located on the left side of the lower control panel and accomplishes the following functions:

(1) The upper knob ❼, when pressed, serves as an AC ON/OFF Switch.

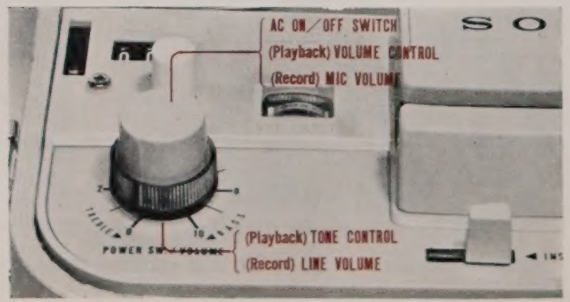
When rotated in "Record Mode", it controls the microphone input level.

When rotated in "Playback Mode", it controls the speaker volume or line out level.

(2) The lower portion of the knob ❽ functions as a TONE CONTROL. It controls high frequencies in playback mode and is calibrated from 0 to 10 with designations "BASS" and "TREBLE" at each end.

In record mode, it controls the level of Line Input.

NOTE: This feature of separate level controls for microphone and line input provides the facility of "live" microphone while recording from an AM/FM tuner, disc or any other auxiliary source. (See page 10.)



8. RECORD BUTTON ❻

Located between the TAPE COUNTER ❹ and the AC ON/OFF Switch ❼.

This Button can be locked when the FUNCTION Selector ⓬ is in STOP position. It is then convenient for Public Address and record level setting independent of tape motion. (See Public Address page 10.)

To start recording, keep the RECORD Button depressed until the mechanism is placed in FORWARD motion; otherwise it will automatically return to Playback mode. To stop recording turn the FUNCTION Selector to STOP position. The RECORD Button will automatically disengage.

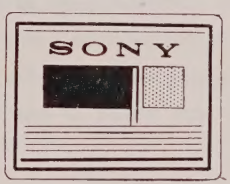
NOTE: (1) To release the RECORD Button when the FUNCTION Selector is in STOP position, push the INSTANT STOP Lever ❾ slightly down and to the left. (In case the Lever clicks, push the Lever down again.) The RECORD Button will also be released by turning the FUNCTION Selector to FORWARD. Be sure to return the Selector to STOP position to prevent the malfunction in the mechanism.

(2) This button is furnished with mechanical safety interlocks to prevent accidental erasure of pre-recorded tapes.

9. RECORD LEVEL METER ❸

The Model 102M features a special VU METER for extremely accurate recording level indication. It is calibrated to allow maximum recording level without distortion when the indicator pointer deflects up to the red area. It should only occur during transient peaks. If the pointer remains in the red zone, lower the recording level accordingly.

NOTE: The LEVEL METER operates only when the Model 102M is in record mode.



REC. LEVEL

10. SPEAKER SWITCH ⓫

Located at right of the lower panel, it is used to control speaker output. Press it down to monitor recordings through the built-in speaker. Howling (acoustic feedback) may occur if the microphone comes too near the speaker. In this case, press SPEAKER Switch ⓫ again to turn the speaker off or place microphone further away from the speaker and reduce volume if necessary.

NOTE: This switch operates in record mode only.

Erasing

The ERASE HEAD operates in record mode only and erases the pre-recorded upper half track of the tape. To erase all the previous recordings, turn VOLUME CONTROL Knobs ❼ ❽ to minimum [0] and place the recorder in record mode. Run the tape through at 7½ ips, then reverse the tape and repeat this operation.

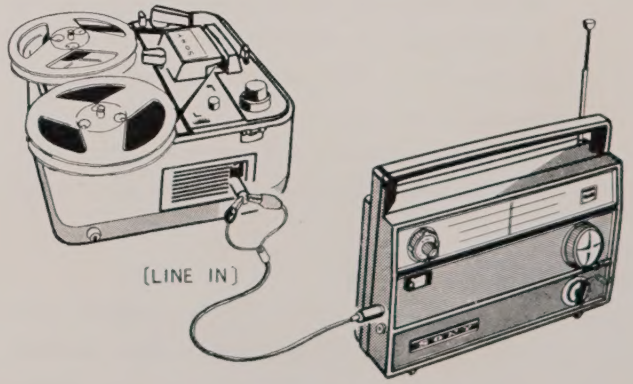
NOTE: For quick and easy erasure of tape use a bulk eraser.

Recording from AM/FM Tuner or Phonograph

To record from AM/FM tuner or phonograph, better sound quality will be obtained by using the Connecting Cord provided as an accessory.

Most modern electronic components (radio, phonograph or other tape recorders) have provision for connection to other components by means of simple jack connectors. The most common designations on all components will most likely be: AUX, LINE IN, LINE OUT or some variation of these.

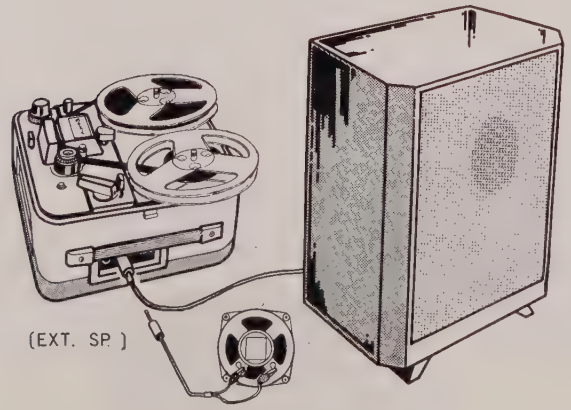
For example, LINE OUT of other components should be connected to the [LINE IN] ⓴ of the Model 102M.



Connection to External Speaker

Plug the connecting cord into the EXTERNAL SPEAKER Jack ㉒ designated (EXT. SP.) located at right side of the Model 102M. Connect the alligator clips to the terminals of the external speaker. (See illustration.)

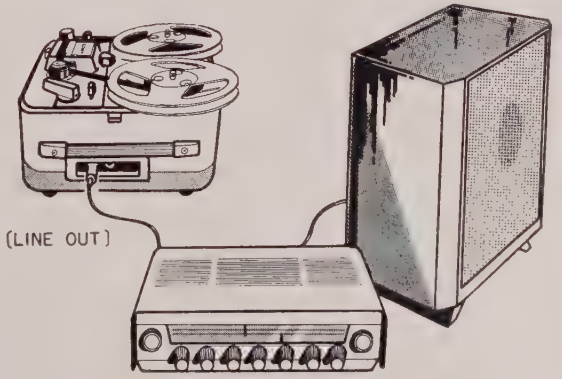
NOTE: The ideal external speaker impedance should be 8 ohms. 4 ohm or 16 ohm speaker may be used if necessary.
When using the EXT. SP. Jack ㉒, the built-in speaker is automatically disconnected.



Connection for External Amplifier/Speaker System

Plug the connecting cord into LINE OUT Jack ㉑ and connect the alligator clips to the external amplifier. The black clip should be connected to the ground terminal.

NOTE: As the plugs are connected into EXT. SP. Jack ㉒ and/or LINE OUT Jack ㉑, the built-in speaker is automatically disconnected.



Public Address

Public Address is accomplished by the use of a special record button which permits the use of the built-in amplifier and speaker or an external speaker independent of tape motion.

TO OPERATE

1. Plug the microphone into the MIC Jack ⑲ or extension cable from the output of a radio or phonograph into the LINE IN Jack ⑳.
2. Press SPEAKER Switch ⑪ ON.
3. Press the RECORD Button ❻ until it clicks and adjust Volume Control for desired sound level.

NOTE : (1) Howling (acoustic feedback) may occur when the Microphone is too near the speaker or when the level control is adjusted for too much sound volume. To avoid this keep the microphone further away from the speaker or reduce volume.

(2) To release the RECORD Button when the FUNCTION Selector is in STOP position, push the INSTANT STOP Lever slightly down and to the left. (in case the Lever clicks, push the Lever down again.) The RECORD Button will also be released by turning the FUNCTION Selector to FORWARD. Be sure to return the Selector to STOP position to prevent the malfunction in the mechanism.

MIX Recording

The professional feature of separate level controls for microphone and Line input of the Model 102M permits simultaneous recording with microphone and other sources such as an AM/FM tuner, disc, TV, etc.

TO OPERATE

(It is necessary to use the earphone for "mixed" recording.)

1. Connect the microphone and other source to proper inputs.
2. Using the VU Meter for indication, adjust recording level of the predominant source desired. (For example, if recording a narration or solo performances, and a musical background is desired, the microphone would be the predominant source. If recording from a tuner or disc and a narration is secondary, the predominant source would be the Line input.)
3. After adjusting desired recording level of the predominant source, adjust level control of the secondary source until a desired balance of both sources is audible through the earphone.
4. You are now ready to proceed with the recording.

Maintenance

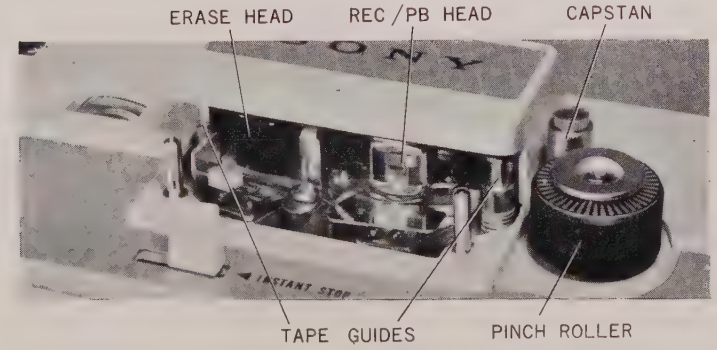
CLEANING HEADS

A clean contact between heads and tape is important for optimum performance. The heads, tape guides, capstan and pinch roller should be wiped clean.

TO CLEAN

Take a piece of soft, clean fabric or Q-Tip; dampen with denatured alcohol. Pull the HEAD COVER straight up and remove. Carefully wipe the portion of the heads over which the tape travels. The same procedure is recommended for cleaning capstan, pinch roller and tape guides. This will prevent oxide deposits from causing wow and flutter.

NOTE: Do not touch the surface of the head with any steel tool.



CLEANING CABINET

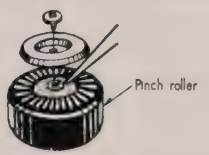
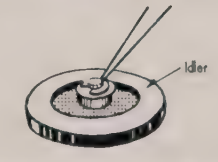
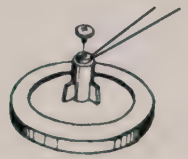
The vinyl covering, plastic panel and painted surfaces may become soiled after long use. Clean them with a weak solution of denatured alcohol.

NOTE: Damage may result to the cabinet if such strong solutions as benzine, thinner or acetone are applied during cleaning operations.

CLEANING MECHANISM

When the recorder is used over extended periods of time, dust and oil deposits will accumulate on the idler surface and on other parts with which each idler comes in contact. This may cause slippage or malfunction of the mechanism. Remove the three holding screws and lift off the top panel. Clean each idler, fly wheel and motor pulley with a soft cloth moistened with denatured alcohol.

Lubrication Chart

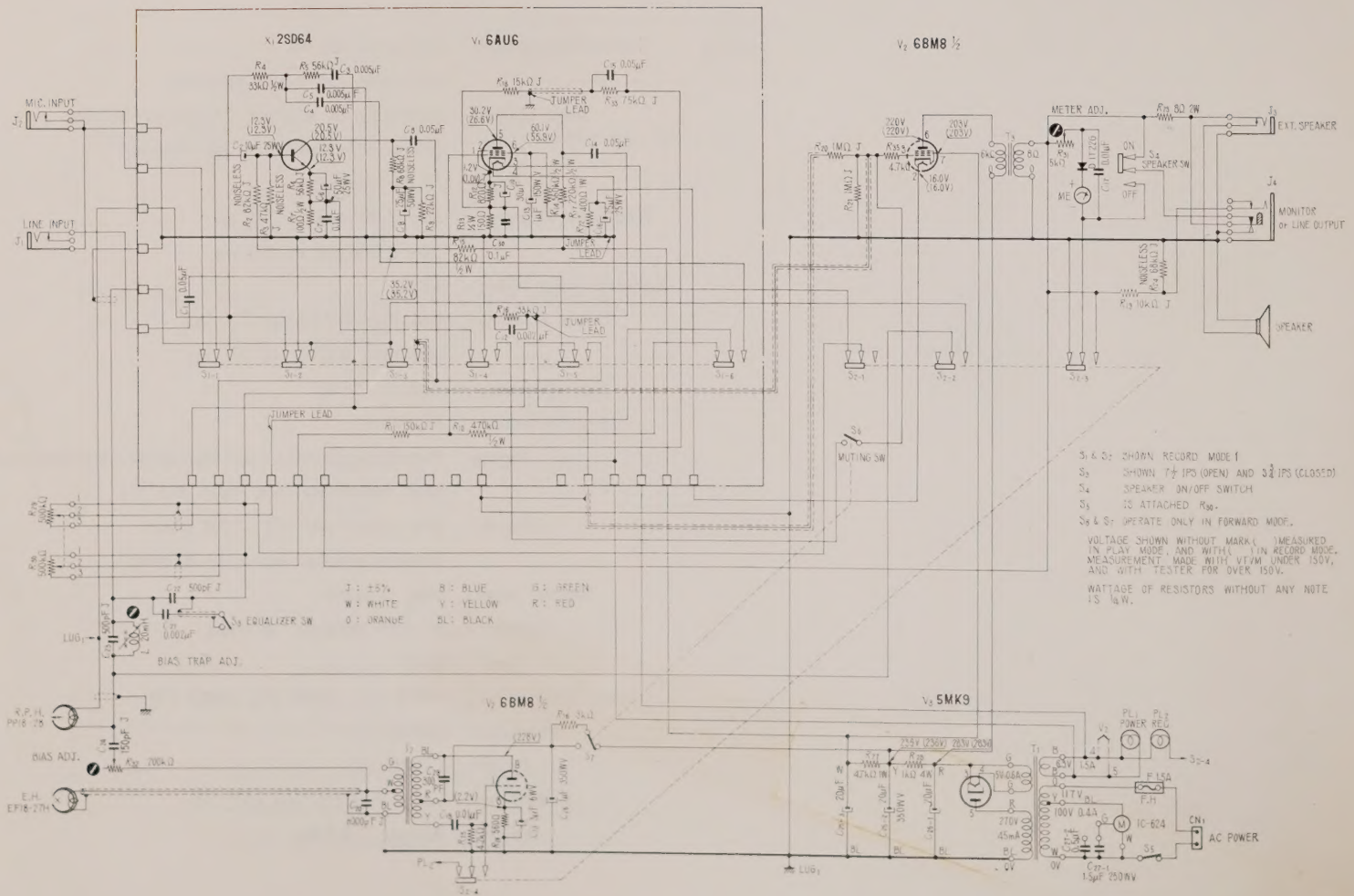
Parts to lubricate	Quantity of oil	Type of oil	Remarks	Figures
Capstan bearings	3 drops once a month	Light machine oil	Don't stain capstan surface.	
Pinch roller bearings	1 drop once a month	Light machine oil	Don't stain rubber surface.	
Idler shafts	1 drop once a month	Light machine oil	Remove top cover panel to gain access.	
Reel shafts	1 drop once a month	Light machine oil		

NOTE : (1) Avoid excessive lubrication. It will cause slippage in the mechanism and contamination of your tape.
(2) If stalling occurs in FAST FORWARD motion, clean each rubber idler wheel under the top panel with a soft cloth moistened with denatured alcohol.

Technical Specifications

Power Requirement :	117 volts, 65 VA
	60 cycles (50 cycles optional)
Tape Speeds :	Instantaneous selection 7½ ips or 3¾ ips
	(19 or 9.5 centimeters per second)
Reels :	7″ or smaller
Frequency Response :	50–12,000 cps at 7½ ips
	50– 8,000 cps at 3¾ ips
Signal-to-Noise Ratio :	45 db
Flutter & Wow :	Less than 0.20% at 7½ ips
	Less than 0.25% at 3¾ ips
Bias Frequency :	Approx. 50 Kc
Level Indication :	VU Meter
Inputs :	Microphone jack (1)—low impedance—transistorized
	High impedance Line input jack (1)
Outputs :	Line output jack (1)—10 K ohms
	External speaker jack (1)—8 ohms
Output Level :	Max. 2 watts
Speaker :	4″ × 6″ dynamic—8 ohms
Track :	Dual
Tube Complement :	6AU6 (1), 6BM8 (1), 5MK9 (1)
Transistor :	2SD64 (1)
Diode :	1T22G (1)
Dimensions :	13½″W × 7½″H × 10½″D
Weight :	Approx. 18.5 lbs.

Schematic Diagram



SONY CORP. TOKYO JAPAN

3-790-184-41 (1)